



# COMPOSTING: Worm Recycling

## Grade level

K-12

## Subjects

Science, Natural Systems

## Teaching Time

One hour for set-up and weekly maintenance

## Skills

Observation, Math

## Materials

Container for bin, hand rake or trowel for burying food waste, red worms, newspaper, leaves and/or cardboard, and soil. See “tips” for each procedure.

## OBJECTIVES

Students will learn how they can take one more step with recycling, and also learn more about nature’s version of recycling.



## PROCEDURE

### Making the Bin

For classroom demonstration purposes, start with a container that is at least 2’x3’x2’. Lots of different containers can be used, but whatever container you choose, it must have these three characteristics: 1) be dark inside, 2) have a good lid, and 3) have air holes and/or drainage. A good lid is one that covers the top, but does not have to attach securely to the container. Air holes are needed somewhere on the container in the lid, sides, or bottom (if the container is off the ground.) For example, if you have chosen to use a “Rubbermaid” storage tub, poke holes in the top half of the sides, all the way around, about 3-4” apart.

### TIPS

Use:

- A wood box or old drawer
- An old Styrofoam cooler
- A plastic storage tub
- A halved barrel

Don’t use:

- An old aquarium
- A clear plastic storage container
- A cardboard box

### Setting up the Worm Bin

You will need some “bedding” materials to provide the worms with a balanced diet and a damp place to live. Many materials can be used, but the easiest to acquire are shredded newspaper, leaves, soil and water.

**Step 1:** Shred newspaper and immerse in water.

**Step 2:** Squish the excess water out of the newspaper and pull it apart so it is nice and loose.

**Step 3:** Gather some non-waxy, brown leaves (or cardboard pieces).

**Step 4:** Mix the leaves and damp newspaper together in the bin.

**Step 5:** Think of the bedding materials as a salad. The leaves and newspaper are the greens (lettuce) and the soil is the dressing. Pour soil onto the leaves and newspaper and “toss the salad!”

**Step 6:** Add the worms!

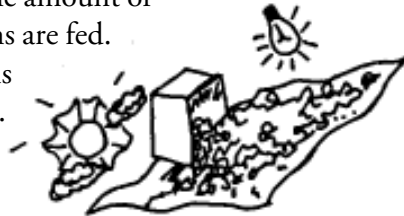
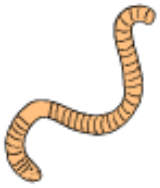
### TIPS

- Do not use glossy or waxy paper or waxy leaves (i.e. laurel leaves, rhododendron leaves or pine needles).
- If no brown leaves can be found, shredded and moistened cardboard can be used.
- If using a wood box, place a piece of black plastic over the bedding materials to retain moisture.
- To absorb excess moisture, add dry shredded newspaper to the bedding of a plastic container that is collecting water.

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## Feeding the Worms

Feed your worms frequently (once or twice a week) by burying the food waste in holes dug in the bedding. Bury the scraps in a different spot each time to provide the worms with a balanced diet. ALWAYS cover the food wastes with a few inches of damp bedding material. This will discourage flies and odors. The amount of food will vary depending on the size of the bin and the number of worms. To be safe, start out feeding the worms one 16 oz. margarine container of food waste once a week. If it is being eaten, increase the amount of food or the frequency that the worms are fed. If there is too much food, the worms won't be able to keep up, so add less.



## TIPS

- Keep a supply of newspaper and leaves nearby. Each time you feed the worms, add a little bit of damp bedding material (1 or 2 handfuls).
- What to feed the worms: vegetable scraps, grains, fruit scraps including rinds and peels, breads, coffee grounds and filters, tea bags.
- What not to feed the worms: Meat, fish, cheese, oily foods, butter, animal products.
- Bury, bury, bury the food wastes.

## When to Harvest the Bin

How do you know when your classroom worm bin is ready to harvest? After 1-2 months of feeding the worm bin, the bedding material will start to darken in color. In 2-3 months, the bedding material will begin to disappear. Most worm bins are ready to harvest after 4-6 months. Harvest? Harvest what? The good stuff that the worms produce: the "vermicompost" or "worm castings." The vermicompost or castings are great fertilizer. They are like vitamins for your plants!

## How to Harvest the Bin

First, lay a large plastic sheet outside in the sunlight. Dump the contents of your worm bin onto the tarp and divide the material into cone-shaped piles. The worms will go to the bottom of each pile away from the light. Remove the top and sides of the piles and put that into containers. You'll have lots of worms left in the bottom center of each pile.



## What to Do with the Worms

Gather the worms from the piles and put them aside in a bucket or container. In the meantime, prepare another supply of bedding in the empty worm bin. Add the worms to the new bedding and start all over again! Also, the red wigglers make great fishing worms!



## What to Do with the Castings

Use the castings in the garden. Sprinkle them around plants as mulch or mix with potting soil in planters. Don't worry if there are some worms left in the castings. The worms will find new homes in the garden.

## Excellent Resources

Books: *Worms Eat My Garbage* and *Worms Eat Our Garbage* (a teacher's guide with student worksheets and activities) by Mary Appelhof.

Websites: [www.wormdigest.org](http://www.wormdigest.org)  
[www.wormwoman.com](http://www.wormwoman.com)  
[www.cityfarmer.org/wormcopm61.html](http://www.cityfarmer.org/wormcopm61.html)

